2MASS and Wolf-Rayet Stars in the Galaxy and the LMC

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Wolf-Rayet (W-R) stars are evolved very massive stars ($M \gtrsim 30\ M_{\odot}$ in the Milky Way) and therefore trace out recent massive star formation in galaxies. In our Galaxy the majority of W-R stars are likely obscured by intervening dust in or near the Galactic plane. Near-infrared observations, particularly surveys, offer a means of detecting hidden W-R stars. The Two Micron All Sky Survey (2MASS) has observed over 60% of the catalogued Galactic W-R stars and all catalogued W-R stars in the Large Magellanic Cloud (LMC) at J (1.25 μm), H (1.65 μm), and K_s (2.17 μm), as part of its systematic coverage of the entire sky with automated 1.3-m telescopes at Mt. Hopkins, AZ, and CTIO, Chile. The cameras observe the sky in the three channels simultaneously, using 256×256 HgCdTe detector arrays. The survey samples the sky in 6 deg $\times 8\farcm3$ tiles. The 2MASS Production Processing System transforms the raw binary survey data to final atlas images and source extractions with precise photometric calibration and astrometric positions. The Survey's 10σ sensitivities are 15.8 mag at J, 15.1 at H, and 14.3 at K_s. We present the near-infrared colors and magnitudes of the observed W-R stars in both galaxies. We attempt to identify previously-unknown candidate W-R stars in the Galaxy and the LMC using 2MASS data. 2MASS is a joint project of the University of Massachusetts and the Infrared Processing and Analysis Center, funded by NASA and NSF.

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